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☐ 1: Schweiz Med Wochenschr 1997 Feb  
1;127(5):158-64

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LinkOut

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## Aerosol therapy in patients with cystic fibrosis.

Schoni MH, Nikolaizik WH.

Alpine Children's Hospital, Davos.

Related Resources

Aerosol therapy is one of the mainstays of treatment, together with regular physiotherapy, in patients with cystic fibrosis. Inhalation can contribute to hydration of the epithelial lining fluid as well as delivering different drugs directly to the lungs. Topically administered antibiotics can protect the lungs from Pseudomonas infection, recombinant DNase, amiloride and beta-agonists can have a positive effect on the mucociliary clearance, and steroid inhalations can reduce inflammation. Therefore, all these drugs are part of a comprehensive treatment strategy contributing to improvement in lung function and quality of life. Gene therapy and pharmacological correction of the chloride channel defect are perspectives for the future. Aerosol therapy, however, is somewhat cumbersome and requires strict patient education.

### Publication Types:

- Review
- Review, tutorial

PMID: 9042684 [PubMed - indexed for MEDLINE]

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(FILE 'HOME' ENTERED AT 13:27:40 ON 12 JUL 2001)  
**SEARCH UPDATE FOR 09/330,903 7/17/01**

FILE 'MEDLINE' ENTERED AT 13:28:12 ON 12 JUL 2001  
L1 19422 S CYSTIC FIBROSIS  
L2 594 S L1 AND GENE THERAPY  
L3 35 S L2 AND AEROSOL?

FILE 'STNGUIDE' ENTERED AT 13:44:49 ON 12 JUL 2001

FILE 'MEDLINE' ENTERED AT 14:02:38 ON 12 JUL 2001  
L4 9 S ELASTASE AND ANTISENSE

FILE 'BIOSIS, EMBASE, CAPLUS' ENTERED AT 14:04:29 ON 12 JUL 2001  
L5 40 S L4  
L6 30 DUP REM L5 (10 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 14:06:26 ON 12 JUL 2001

FILE 'STNGUIDE' ENTERED AT 14:12:09 ON 12 JUL 2001

FILE 'MEDLINE' ENTERED AT 14:27:27 ON 12 JUL 2001  
L7 135 S AEROSOL AND (CONDENS? OR POLYCATION OR POLYLYSINE  
OR PROTAMIN  
L8 5 S L7 AND (DNA OR RNA OR POLYNUCLE? OR PLASMID OR  
VECTOR)

FILE 'BIOSIS, CAPLUS, EMBASE' ENTERED AT 14:32:19 ON 12 JUL 2001

=> s l8

L9 41 L8  
L10 29 DUP REM L9 (12 DUPLICATES REMOVED)

FILE 'MEDLINE' ENTERED AT 07:01:03 ON 13 JUL 2001  
L1 8 S AEROSOL AND OLIGONUCLEOTIDE AND LUNG

FILE 'CAPLUS, EMBASE, BIOSIS, BIOTECHDS' ENTERED AT 07:03:17 ON 13  
JUL  
L2 43 L1  
L3 28 DUP REM L2 (15 DUPLICATES REMOVED)

(FILE 'HOME' ENTERED AT 07:56:27 ON 13 JUL 2001)

FILE 'MEDLINE' ENTERED AT 07:56:33 ON 13 JUL 2001

L1 3 S AEROSOL AND ANTISENSE AND (LUNG OR RESPIRAT? OT  
TRACH?)

FILE 'CAPLUS, EMBASE, BIOSIS, BIOTECHDS' ENTERED AT 07:57:34 ON 13  
JUL  
2001

L2 34 S L1  
L3 26 S L2 AND OLIGONUCLEOTIDE  
L4 20 DUP REM L3 (6 DUPLICATES REMOVED)  
L5 4463 S AEROSOL AND (CONDENS? OR POLYCATION OR POLYLYSINE  
OR PROTAMIN

FILE 'MEDLINE' ENTERED AT 08:02:08 ON 13 JUL 2001  
L6 136 S L5  
L7 5 S L6 NOT CONDENS?  
L8 0 S PROTAMIN AND AEROSOL  
L9 3 S PROTAMINE AND AEROSOL?

FILE 'CAPLUS, EMBASE, BIOSIS' ENTERED AT 08:11:17 ON 13 JUL 2001  
L10 22 S L9  
L11 15 DUP REM L10 (7 DUPLICATES REMOVED)  
L12 41 S AEROSOL AND (POLYCATION OR POLYLYSINE OR POLY-L-  
LYSINE OR PRO

FILE 'STNGUIDE' ENTERED AT 08:21:12 ON 13 JUL 2001

(FILE 'HOME' ENTERED AT 09:21:16 ON 13 JUL 2001)

FILE 'MEDLINE' ENTERED AT 09:21:23 ON 13 JUL 2001  
L1 0 S OLIGONUCLEOTIDE AND (AERSOL? OR NUBULI?) AND (LUNG  
OR RESPIRA  
L2 10 S OLIGONUCLEOTIDE AND (AEROSOL? OR NUBULI?) AND (LUNG  
OR RESPIR

(FILE 'HOME' ENTERED AT 08:30:49 ON 16 JUL 2001)

FILE 'MEDLINE' ENTERED AT 08:30:55 ON 16 JUL 2001  
L1 11 S CFTR AND AEROSOL

FILE 'STNGUIDE' ENTERED AT 08:37:52 ON 16 JUL 2001

FILE 'MEDLINE' ENTERED AT 08:51:45 ON 16 JUL 2001  
L2 0 S AEROSOL AND RIBOZYME

L3 25 S RIBOZYME AND LUNG  
L4 0 S AEROSOL? AND RIBOZYME

FILE 'CAPLUS, EMBASE, BIOSIS, BIOTECHDS' ENTERED AT 08:53:48 ON 16  
JUL  
2001

L5 11 S L4  
L6 11 DUP REM L5 (0 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 08:56:53 ON 16 JUL 2001

FILE 'MEDLINE' ENTERED AT 08:57:17 ON 16 JUL 2001  
L7 9 S ELASTASE AND ANTISENSE  
L8 0 S L7 AND AEROSOL?

FILE 'CAPLUS, EMBASE, BIOSIS, BIOTECHDS' ENTERED AT 08:57:56 ON 16  
JUL  
2001

L9 2 S L8

FILE 'STNGUIDE' ENTERED AT 08:58:33 ON 16 JUL 2001

(FILE 'HOME' ENTERED AT 09:20:54 ON 16 JUL 2001)

FILE 'MEDLINE' ENTERED AT 09:21:20 ON 16 JUL 2001  
L1 0 S GONDA/AU AND AEROSOL?  
L2 2 S GONDA AND AEROSOL?  
L3 448 S AEROSOL? AND CAPACITY AND RESPIRATORY  
L4 86 S L3 AND TOTAL  
L5 6 S L4 AND RESPIRATORY (5A) CAPACITY  
L6 0 S TOTAL RESPIRATORY TRACT CAPACITY  
L7 3 S TOTAL RESPIRATORY CAPACITY

FILE 'STNGUIDE' ENTERED AT 09:28:50 ON 16 JUL 2001

(FILE 'HOME' ENTERED AT 13:34:54 ON 16 JUL 2001)

FILE 'MEDLINE' ENTERED AT 13:35:00 ON 16 JUL 2001  
L1 105 S AEROSOL AND (LUNG OR RESPIRATORY) AND (IMMUNE OR  
IMMUNIZ?) AN  
L2 2 S L1 AND PLASMID  
L3 7 S L1 AND VECTOR  
L4 92 S L1 AND (VIRAL OR VIRUS)  
L5 9 S L1 NOT L2-L4

(FILE 'HOME' ENTERED AT 14:18:31 ON 16 JUL 2001)

FILE 'MEDLINE' ENTERED AT 14:18:35 ON 16 JUL 2001

L1 3 S (RIBOZYME OR ANTISENSE) AND AEROSOL

FILE 'CAPLUS, EMBASE, BIOSIS' ENTERED AT 14:19:27 ON 16 JUL 2001

L2 45 S L1

L3 39 DUP REM L2 (6 DUPLICATES REMOVED)

L4 13 S (RIBOZYME OR ANTISENSE) AND NEBULIZ?

L5 12 DUP REM L4 (1 DUPLICATE REMOVED)

FILE 'STNGUIDE' ENTERED AT 14:28:30 ON 16 JUL 2001

FILE 'MEDLINE' ENTERED AT 14:31:54 ON 16 JUL 2001

L6 975 S AEROSOL AND VITRO

L7 10 S L6 AND TRANSFEC?

FILE 'CAPLUS, EMBASE, BIOSIS, BIOTECHDS' ENTERED AT 14:37:10 ON 16  
JUL  
2001

L8 21 S L7

L9 11 DUP REM L8 (10 DUPLICATES REMOVED)

(FILE 'HOME' ENTERED AT 06:17:46 ON 17 JUL 2001)

FILE 'MEDLINE' ENTERED AT 06:18:00 ON 17 JUL 2001

L1 22 S AEROSOL AND TRANSFEC?

L2 648 S RIBOZYME AND VITRO

L3 2 S L2 AND (AERO? OR NEBULIZ?)

L4 8 S L2 AND LUNG

L5 27 S RIBOZYME AND (CONDENS? OR POLYCATION OR POLYLYSINE  
OR SPERMID

FILE 'STNGUIDE' ENTERED AT 06:43:22 ON 17 JUL 2001

FILE 'MEDLINE' ENTERED AT 06:51:15 ON 17 JUL 2001

L6 87 S RIBOZYME AND TOOL

L7 48 S L6 AND EXPRESSION

L8 39 S L6 NOT L7

S #

Updt

Database

Query

	Time	Comment
S2347		
U		
USPT		
		5795587.pn. and (antisense or ribozyme)
		2001-07-17
		08:59:47
S2346		
U		
USPT		
		5795587.pn. and oligonucleotide
		2001-07-17
		08:59:15
S2345		
U		
USPT		
		5994315.pn. and lipid
		2001-07-17
		08:54:42
S2344		
U		
USPT		
		5994315.pn. and cation\$
		2001-07-17
		08:50:22
S2343		
U		
USPT		
		5994315.pn. and elastase
		2001-07-17
		08:22:03
S2342		
U		
USPT		
		5994315.pn.
		2001-07-17
		08:21:04
S2341		
U		

USPT

(antisense same  
ribozyme same  
aerosol ) and  
antisense same  
oligonucleotide

2001-07-17

08:03:28

S2340

U

USPT

antisense same  
ribozyme same  
aerosol

2001-07-17

08:00:48

S2339

U

USPT

ribozyme same  
aerosol inhalation

2001-07-17

07:51:50

S2338

U

USPT

(ribozyme same  
aerosol\$ ) same  
vitro

2001-07-17

07:20:52

S2337

U

USPT

(ribozyme and  
aerosol\$).clm.

2001-07-17

07:17:13

S2336

U

USPT

ribozyme same  
aerosol\$

2001-07-17

07:16:40

S2335

U  
USPT

5639441.pn. and  
antisense  
2001-07-16  
14:29:54

S2334  
U  
USPT

5639491.pn. and  
antisense  
2001-07-16  
14:28:58

S2333  
U  
USPT

5756353.pn. and  
cystic  
2001-07-16  
14:07:19

S2332  
U  
USPT

5756353.pn. and  
cfr  
2001-07-16  
14:06:56

S2331  
U  
USPT

5497763.pn. and  
alveoli  
2001-07-16  
13:27:26

S2330  
U  
USPT

5467763.pn. and  
alveoli  
2001-07-16  
13:27:09

S2329  
U  
USPT

5795587.pn. and  
aerosol\$



2001-07-16  
12:24:49

S2328  
U  
USPT

5795587.pn. and  
(polylysine or  
polycation or  
condens\$)

2001-07-16  
12:21:46

S2327  
U  
USPT

5497763.pn. and  
25 micron\$

2001-07-16  
12:19:28

S2326  
U  
USPT

5756353.pn. and  
(pore or  
membrane)

2001-07-16  
11:14:38

S2325  
U  
USPT,PGPB,JPAB,EPAB,DWPI  
total respiratory  
tract capacity

2001-07-16  
09:30:14

S2324  
U  
USPT

5756353.pn. and  
(dotap or dotma or  
dc-chol)

2001-07-13  
09:12:49

S2323  
U  
USPT

protamine and  
aerosol and (ratio

same (nucleic or  
polynucle\$))

2001-07-13

08:40:20

S2322

U

USPT

protamine sulfate  
and aerosol and  
(nucleic or  
polynucle? or gene)  
and lung

2001-07-13

08:31:26

S2321

U

USPT

protamine sulfate  
and aerosol and  
(nucleic or  
polynucle? or gene)

2001-07-13

08:30:52

S2320

U

USPT

(protamine same  
condens\$ ) and  
aerosol

2001-07-13

08:23:43

S2319

U

USPT

protamine same  
condens\$

2001-07-13

08:23:19

S2318

U

USPT

(total respiratory  
tract) same  
capacity

2001-07-13

07:54:01

S2317  
U  
USPT

respiratory tract  
same capacity  
2001-07-13  
07:53:36

S2316  
U  
USPT

respiraory tract  
same capacity  
2001-07-13  
07:53:29

S2315  
U  
USPT

total respiraory  
tract capacity  
2001-07-13  
07:53:07

S2314  
U  
USPT

(5509404.pn. or  
5660166.pn. or  
5544646.pn. ) and  
total respiraory  
tract capacity  
2001-07-13  
07:46:20

S2313  
U  
USPT

5509404.pn. or  
5660166.pn. or  
5544646.pn.  
2001-07-13  
07:45:53

S2312  
U  
USPT

5509404.pn.  
or5660166.pn.  
or5544646.pn.  
2001-07-13

07:45:46

S2311

U

USPT

lloyd.in. and  
aerosol and lung

2001-07-13

07:41:41

S2310

U

USPT

lloyd.in. and  
aerosol

2001-07-13

07:41:26

S2309

U

USPT

5718222.pn. and  
(nucleic or gene or  
plasmid or dna or  
rna or polynuc\$)

2001-07-13

07:40:43

S2308

U

USPT

5497763.pn. and  
drug delivery  
device

2001-07-13

06:54:01

S2307

U

USPT

5497763.pn. and  
(channel same  
opening)

2001-07-13

06:49:39

S2306

U

USPT

5497763.pn. and  
channel same  
opening

2001-07-13  
06:49:30

S2305  
U  
USPT

5756353.pn. and  
nebuliz\$

2001-07-13  
06:27:40

S2304  
U  
USPT

5906202.pn. and  
(nucleic or gene or  
plasmid or dna or  
rna or polynucl\$)

2001-07-13  
06:20:51

S2303  
U  
USPT

5906202.pn. and  
(nucleic or gene or  
lasmid or dna or  
rna or polynucl\$)

2001-07-13  
06:20:35

S2302  
U  
USPT

5906202.pn. and  
(0.5 to about 6)

2001-07-13  
06:18:03

S2301  
U  
USPT

5906202.pn. and  
(force or forced)

2001-07-13  
06:05:50

S2300  
U  
USPT

5906202.pn. and  
(pore same micron)

S #	Updt	Database	Query	Time	Comment
S2299	U	USPT	5906202.pn. and porous member	2001-07-13 05:59:22	
S2298	U	USPT	5906202.pn.	2001-07-13 05:58:43	
S2297	U	USPT	5906202.pn. and (disposable same porous)	2001-07-12 15:47:59	
S2296	U	USPT	5906202.pn. and disposable	2001-07-12 15:46:25	
S2295	U	USPT	(aerosol same viral envelope)	2001-07-12 15:34:52	
S2294	U	USPT			

(aerosol and viral  
envelope).clm  
2001-07-12  
15:34:30

S2293  
U  
USPT

aerosol and viral  
envelope and lung  
2001-07-12  
15:34:04

S2292  
U  
USPT

aerosol and viral  
envelope  
2001-07-12  
15:33:49

S2291  
U  
USPT

aerosol and viral  
envelope  
2001-07-12  
15:22:56

S2290  
U  
USPT

5756353.pn. and  
antigen\$  
2001-07-12  
15:12:08

S2289  
U  
USPT

(aerosol same  
nucleic) and  
(nucleic same  
polycation)  
2001-07-12  
15:05:37

S2288  
U  
USPT

aerosol and  
(nucleic same

polycation)  
2001-07-12  
15:05:20

S2287  
U  
USPT

(aerosol and  
nucleic and  
polycation).clm.  
2001-07-12  
15:05:01

S2286  
U  
USPT

aerosol and nucleic  
and polycation  
2001-07-12  
15:04:30

S2285  
U  
USPT

5849719.pn. and  
liposom\$  
2001-07-12  
14:40:03

S2284  
U  
USPT

5849719.pn. and  
lipid  
2001-07-12  
14:39:39

S2283  
U  
USPT

(aerosol and  
nucleic).clm.  
2001-07-12  
14:24:50

S2282  
U  
USPT

(aerosol and  
nucleic and  
(polycation or  
condens\$)).clm.



2001-07-12  
14:24:10

S2281  
U  
USPT

(aerosol and  
nucleic and  
(polycation or  
condens\$)),clm.

2001-07-12  
14:24:02

S2280  
U  
USPT

5849719.pn. and  
(condens\$ or  
polylysine or  
polycation\$)

2001-07-12  
14:23:13

S2279  
U  
USPT

5849719.pn. and  
(virus or viral)

2001-07-12  
14:19:51

S2278  
U  
USPT

5948681.pn.

2001-07-12  
13:24:38

S2277  
U  
DWPI

5948681.pn.

2001-07-12  
13:24:07

S2276  
U  
DWPI

59418681.pn.

2001-07-12  
13:23:59

S2275

U  
DWPI

(cystic and aerosol  
and nucleic)  
2001-07-12  
13:21:17

S2274

U  
USPT,PGPB,JPAB,EPAB,DWPI  
(cystic and aerosol  
and nucleic).clm.  
2001-07-12  
13:20:58

S2273

U  
USPT

(5756353.pn. or  
5384128.pn. ) and  
cfr  
2001-07-12  
13:19:46

S2272

U  
USPT

(5756353.pn. or  
5384128.pn. ) and  
transmembrane  
2001-07-12  
13:14:37

S2271

U  
USPT

5756353.pn. or  
5384128.pn.  
2001-07-12  
13:14:23

S2270

U  
USPT

(cystic and aerosol  
and nucleic).clm.  
2001-07-12  
13:11:16

S2269

U  
USPT

5906202.pn. and  
lung

2001-07-12  
11:17:23

S2268  
U  
USPT

5906202.pn. and  
nucleic

2001-07-12  
11:17:06

S2267  
U  
USPT

5906202.pn. and  
(nucleic or  
polynucle\$ or dna  
or rna)

2001-07-12  
11:16:56

S2266  
U  
USPT

5906202.pn. and  
(nucleic or  
polynucleo\$ or dna  
or rna)

2001-07-12  
11:16:33

S2265  
U  
USPT

5906202.pn. and  
oligonucleotide

2001-07-12  
11:13:50

S2264  
U  
USPT

5906202.pn. and  
(dotma or dotap or  
dc-chol)

2001-07-12  
11:12:57

S2263  
U

USPT

5906202.pn. and  
antisense

2001-07-12  
11:11:01

S2262

U

USPT

5906202.pn. and  
ribozyme

2001-07-12  
11:10:38

S2261

U

USPT

5906202.pn. and  
cystic

2001-07-12  
11:09:28

S2260

U

USPT

5906202.pn. and  
naked

2001-07-12  
11:08:09

S2259

U

USPT

5906202.pn. and  
viral

2001-07-12  
11:07:16

S2258

U

USPT

5906202.pn. and  
cation

2001-07-12  
11:06:42

S2257

U

USPT

5906202.pn. and  
lipid

2001-07-12

11:06:32

S2256

U

USPT

5906202.pn. and  
condens\$

2001-07-12

11:04:32

S2255

U

USPT

5906202.pn. and  
polylysine

2001-07-12

11:04:22

S2254

U

USPT

5906202.pn. and  
protamine sulfate

2001-07-12

11:04:05

S2253

U

USPT

5906202.pn. and  
oligonucleotide

2001-07-12

11:03:38

S2252

U

USPT

5906202.pn. and  
elastase

2001-07-12

11:03:14

S2251

U

USPT

5906202.pn. and  
immunogenic

2001-07-12

11:02:04

S2250

U

USPT

5906202.pn. and  
total respiratory  
tract capacity  
2001-07-12  
10:53:42

S2249  
U  
USPT

5804566.pn. and  
aerosol\$  
2001-07-12  
08:20:46

S2248  
U  
USPT

5804566.pn. and  
nucleic  
2001-07-12  
08:19:03

S #	Updt	Database	Query	Time	Comment
-----	------	----------	-------	------	---------

S2247	U	USPT	5697647.pn.	2001-07-12 08:17:40	
-------	---	------	-------------	------------------------	--

S2246	U	USPT	5697647.pn. and nucleic	2001-07-12 08:17:22	
-------	---	------	-------------------------	------------------------	--

S2245	U	USPT	5906202.pn. and anatom\$ dead space	2001-07-12 06:50:23	
-------	---	------	--	------------------------	--

S2244  
U  
USPT  
5906202.pn. and antaom\$ dead  
space  
2001-07-12  
06:50:15

S2243  
U  
DWPI  
WO 9801161  
2001-07-11  
14:24:50

S2242  
U  
DWPI  
illum.in.  
2001-07-11  
14:23:24

S2241  
U  
USPT  
(codon near5 optimiz\$).clm.  
2001-07-11  
13:59:26

S2240  
U  
USPT  
gonda.in. and respiratory  
2001-07-11  
07:37:10

S2239  
U  
USPT  
gonda.in.  
2001-07-11  
07:36:48

S2238  
U  
USPT  
anatomical dead space  
2001-07-11  
07:14:35